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ABSTRACT

This document focuses on the physical environment of Wisconsin and describes how movement of glaciers during the Ice Ages formed Wisconsin's present topography. The journal contains short reading selections, stories, word lists, and activities designed to help elementary school students understand the causes and effects of glacial drift. Nine reading selections (1) describe glacial drift and how it reshapes the earth's surface; (2) identify the five regions of Wisconsin today and show how the differences in their physical geography reflect different degrees of glacial influences; (3) identify major rivers and lakes; and (4) explain how vegetation in the state's different regions is influenced by climate. A short story introduces students to the educational benefits of exploring caves. Another section discusses French and Indian influence on names of towns and areas in Wisconsin. The document also includes a crossword puzzle, drawing and writing activities, and maps. (AV)

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WISCONSIN GEOGRAPHY
Badger History

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Badger History

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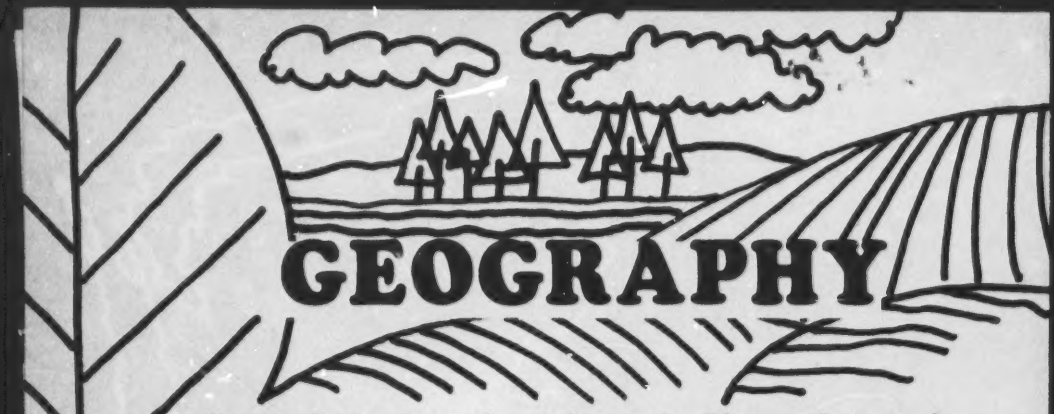

GEOGRAPHY

Geography is the study of the earth. The word comes from the Latin *geographia.* It means "writing about the earth."

Geographers are men and women who study the earth's surface. They are also interested in learning about the weather. They are eager to know about plants, animals and people of any area. This issue of *Badger History* tells about our state's geography. We'll take a look at Wisconsin's landscape. What do you know about rivers? hills? valleys? Can you name plants that grow in different parts of the state? Have you visited a cave?

The study of the earth's surface is called *physical* geography. Forces of nature have changed the landscape in important ways. Long ages ago, the last glacier covered most of North America. Much of Wisconsin was under many feet of ice. When the sheet of ice melted, hills, valleys, lakes and rivers appeared. Since then, water has been at work rearranging the surface. Rain waters and rivers carry away soil.

What changes have men and women made on the surface of our state? The study of these changes is called *cultural* geography. Farms, mines, dams, roads, and cities are some of these changes. What others can you name?

For more information about changes made by man, read these issues of *Badger History:*

Water Pollution
Urban Life: City Development
Wisconsin Environment

NATURE'S BULLDOZERS

by Howard Kanetzke

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Many visitors come to enjoy Wisconsin's scenery. They exclaim, "How beautiful! Wisconsin has everything — hills, valleys, rivers, rocks, prairies, and lakes." We owe this landscape to the work of glaciers.

Long ago huge sheets of ice covered most of this region. They cut down hills and filled in valleys. When they melted, Wisconsin's land had been changed completely. Glaciers have covered our state at several different times.

THE WORK OF GLACIERS

Before the last glaciers moved southward from Canada, the weather changed. Summers became short and cool. Winters were long and cold. Winter snows did not melt during short summers. Snow and ice reflected the sun's heat back into the sky. The surface of the ground stayed cool. Snow robbed the air above it of warmth. Temperatures dropped. Year after year, century after century,

snow piled higher and higher. Finally, the weight caused the ice on the bottom to melt a little. This melting allowed the great body of ice to slide slowly down over North America. The ice was divided into lobes shaped like huge arms. Lobes of the glaciers moved like giant bulldozers over the countryside. These slow-moving walls of snow and ice scraped off hilltops and filled in valleys. Sheets of ice picked up soil, sand, gravel, and rocks. All of these were mixed together in the ice. As time passed the glaciers carried the mixture many miles to the south.

Then came years of milder weather. A little ice melted each summer. Warm breezes turned ice to water at the southern edge of the glacier. Summer sun beat down on rocks and dirt lying on the ice. Holes and cracks appeared in the glacier. Icy rivers tumbled through holes and cut channels beneath the glacier. Rocks, sand, and dirt collected in these rivers that flowed through the glacier. As the glacier melted away, soil, sand and rocks fell to the ground. Scientists call such materials drift. In places the drift is only a few inches thick — in others it is hundreds of feet deep!

Swift rivers flowed out of glaciers. They carried sand and dirt. As the water slowed, these materials were dropped. Huge flat areas of land appeared. Some of these became prairies.

When the glacier melted, big boulders and stones fell to the ground. Many of these had been carried by the glacier from Canada. When settlers came to Wisconsin in the 1800's, they sometimes had to move large rocks to clear fields. Stones were used to build fences and barns.

Scientists tell us that lands in the glaciated area (lands covered by glaciers) are worth several hundred million dollars more than those not covered by the glacier. Glaciers improved land in Wisconsin more than man ever could have done.

In addition, glaciers left an almost endless supply of sand and gravel. Both are needed as building materials. Our highways and bridges would

cost more if we had to haul sand and gravel from faraway places.

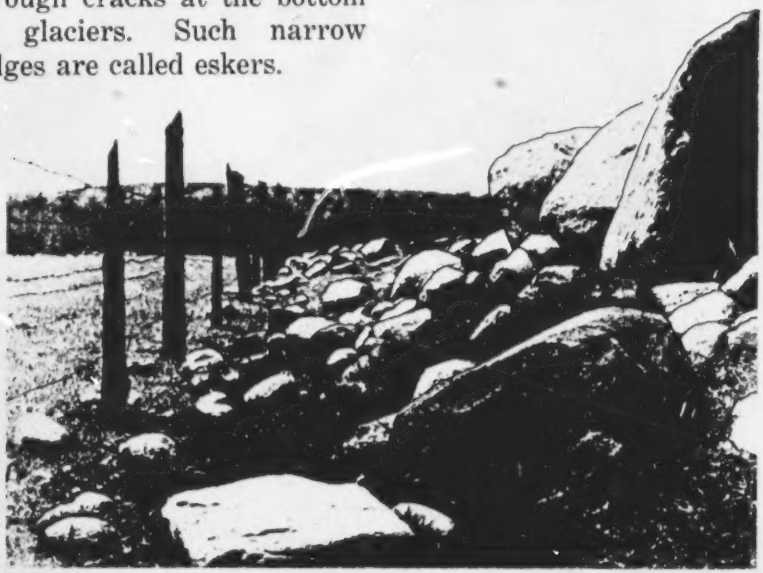
Sometimes the cliff face of ice melted as fast as the speed at which the glacier moved forward. Then all the drift dropped in one place. It formed a long ridge called a moraine. These ridges can be seen easily from planes. They are often too steep for farming. Many are covered with trees.

In places the glacier left hills of soil, sand, gravel, or all three. These hills have many shapes. Some are long, narrow ridges. They were dropped by waters of rivers that flowed through cracks at the bottom of glaciers. Such narrow ridges are called eskers.

In some places potholes developed in glaciers. Drift filled these openings. Hills that remain are called kames.

Big chunks of ice broke away from the glacier and were buried under drift. This ice melted slowly. When it finally melted, a hole appeared in the ground. Small holes are called kettles. Some kettles have filled with water and become lakes. One part of southeast Wisconsin has many kettles. It is now Kettle Moraine State Park.

Glaciers cut deep and fast when they came to river valleys or places where rock was soft.



A marsh

Glaciers dug the Great Lakes. One lobe scooped out Lake Michigan. Another created Green Bay. The rock between the lobes under Door County is especially hard. Glaciers could not dig at this place. Instead, they rode over the rock.

The glacier changed routes of rivers by filling in riverbeds. Devil's Lake is now a beautiful lake. But before the glacier came, the lake was part of the Wisconsin River. The glacier dropped dams of drift across the river in two places. Water filled the area between them. Devil's Lake was created. The Wisconsin River now flows several miles to the east.

Today there are many marshes in Wisconsin—places where water is standing rather than running away. Some marshes were made when glaciers dropped drift in paths of rivers. In other locations, glaciers left a flat landscape. Few rivers have developed in these places. It is difficult for water to drain away.

THE DRIFTLESS

All of Wisconsin has been covered by glaciers at different times. Between these times, warm weather, plants and animals returned to the area. What did Wisconsin look like before the *last* glacier arrived? One part of our state was missed by lobes of that glacier. It is called the Driftless Area. Because the last glacier did not cover this region, no drift can be found there. Of course other sections of North America were also missed. But Wisconsin's Driftless Area is special. All the land around it was covered by ice. This "island" of driftless area is about the size of the country of Denmark.

How did the glacier miss this part of Wisconsin? The answer is found by looking at how lobes of the glacier moved across Wisconsin. The high land in northern Wisconsin and Michigan slowed up several of the great lobes of the glacier (see map). The Lake Michigan Lobe moved around the Green Bay Lobe. It joined the Superior Lobe. So sheets of ice surrounded the Driftless Area.

The Driftless Area is one of the most beautiful parts of our state. Less than half of it was prairie when the first explorers came. Many prairies can be located by their names — Prairie du Chien, Prairie du Sac, and Prairie La Crosse (now shortened to La Crosse). Muscoda is an Indian word meaning "land without trees." Waving grasses and wild flowers covered the rolling prairie when settlers arrived. High, steep hills and cliffs of rock rise above the prairies. Rocks shaped like steeples and chimneys are common.

There are several natural bridges in this region. Near Rockbridge (Richland County) a river cut an arch of about ten feet through a cliff. The rock cliff is sandstone. Sandstone is sand that has been pressed into rock. A second natural bridge stands about a

AREA

mile northeast of Leland in Sauk County. This bridge has an arch that is thirty-five feet across.

Almost all of Wisconsin's caves are found in the Driftless Area. Many are located in the zinc and lead mining region. In early times, miners found lead in caves. Reports of such finds helped bring miners to Wisconsin.

Rivers and streams of the Driftless Area carry water to the Mississippi River. There are no real lakes here. Recently, man-made lakes have been developed in state parks.

Two Landscapes

Wisconsin citizens are fortunate to have such different landscapes within their state. The glaciers did much to improve our lands. But it is also good to have places not touched by these great sheets of ice.

WORDS
to learn and use

Some words have many meanings. The definitions on these pages explain how the words are used in *Badger History*.

Escarpment *(ĕs kărp′mĕnt)* A high steep rock slope that extends for a long distance.

Fertilizer *(fĕr′tĭl ī zĕr)* A material put on field to help crops develop.

Irrigate *(ĭr′ĭ gāte)* To supply land with water pumped from wells or taken from rivers.

Lobe *(lōbe)* An arm-like section of a glacier.

Moraine *(mŏ rān′)* A mound or ridge of earth that was dropped by a glacier.

Tributary *(trĭb′ yū tĕr ē)* A small stream that flows into a larger river.

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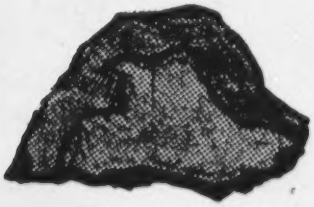
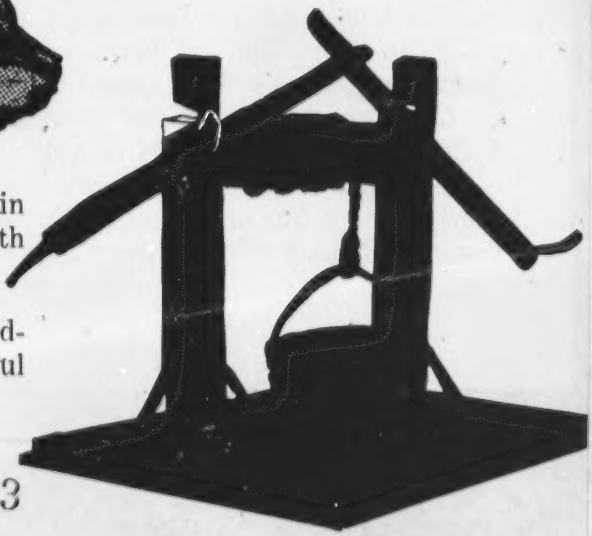


Vein *(vān)* An opening in rock that has been filled with a mineral—like lead.

Windlass *(wĭnd′ lăs)* A hand-powered machine used to haul ore up from a mine.



The Regions of Wisconsin

Wisconsin is divided into five separate regions. Each has a different landscape. Some plants and animals thrive in one of these regions better than another. Men have been able to make a living in each area. Names of the regions tell us something about their landscapes.

Northern Highland
Lake Superior Lowland
Central Plain
Western Upland
Eastern Ridges and Lowlands.

All of these landscapes were changed by glaciers. Much of the Western Upland, however, was not touched by the last glacier. Rock hillsides and deep valleys are found here.

The Northern Highland is the part of our state that is highest above sea level. This region has long winters and short summers. Only plants that like short summers grow well. Much of the area has been covered by forests. Pine trees are found here.

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The Lake Superior Lowland is a narrow belt of land near Lake Superior. The soil is good. Late spring and early fall frosts give plants a short growing season.

Much of the Central plain is flat. Glaciers left some drift (piles of stones and gravel) as hills and ridges.

The Eastern Ridges and Lowlands have rich farmland. The countryside is flat or rolling. Today one of every four citizens lives in this part of the state.

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NORTHERN HIGHLAND

by Alonzo W. Pond

The Northern Highland is the largest region in Wisconsin. It has the shape of a shield carried by an ancient warrior. The rounded top of the shield points southeast toward Green Bay. The other edge is near Lake Superior.

Like a shield, the Northern Highland is curved in the middle. It slopes away to the edges. That is why rivers of the Northern Highland flow in all directions. Large streams run south. Short ones flow north.

Rocks which form this shield-shaped area are among the oldest in the world. They make an interesting history book about Wisconsin.

"Pages" of this book are layers of rock. Sometimes the banks of a river show several layers of rock. The face of a stone quarry shows other sections. The walls of deep mines expose more "pages."

Fossils of plants and animals tell us which rocks are oldest. When rock layers are level, we know that the bottom one is older than those on top. When layers are tilted on edge, it is not easy to tell which came first. Then fossils help. They identify the layers no matter what position they are found in.

The Northern Highland is a peneplain (penny-plain). A peneplain is a gently rolling landscape that was once a mountain range.

The Northern Highland is nearly flat. Railroad builders had little difficulty in laying tracks through the Highland. The railroad from Marshfield to Superior is 180 miles. That is only eight miles longer than a "bee line" between the two cities. The distance from St. Paul to Sault St. Marie by steel rail is 205 miles. The flight of a honey bee shortens this only by ten miles!

Near the center of the Northern Highland is an area of freshwater lakes. There are nearly two thousand lakes in Vilas and Oneida Counties. Many of them have no names! No one knows how many hundreds of potholes, bogs, and swamps there are. The lakes and potholes were caused by the last glacier.

Today springs fill those glacial basins to make the Northern Highland lakes. On the 15

eastern edge of this water-dotted plain is the longest chain of freshwater lakes in the world. Twenty-seven lakes are connected by the Eagle River.

Some lakes have clear water. Gravel bottoms sparkle twenty feet below the surface. Such lakes are spring fed. Water which reaches them has passed through many feet of sand. Other lakes are dark colored from iron-filled clay.

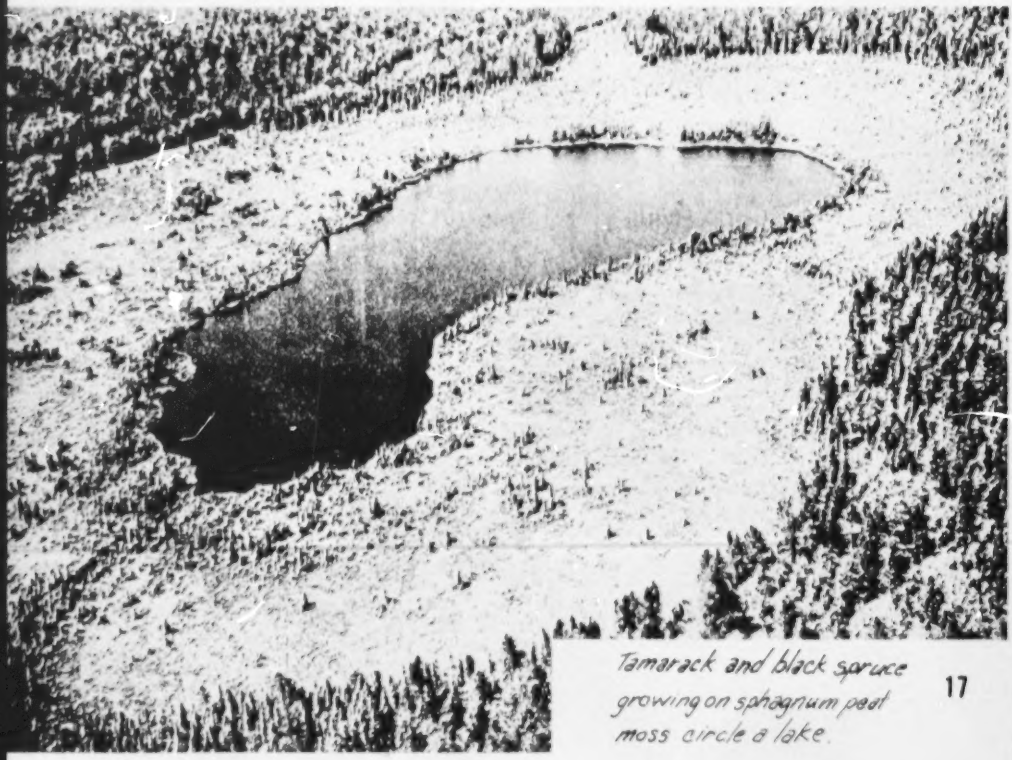
Many black water lakes are deep to the edge of their boggy shores. The shore is lined with sphagnum peat moss. It floats

like a wet sponge, partially under water. As it grows, the old, rotted peat hangs to the living plant until it forms a mat strong enough to hold other plants. After many years the mat may reach to the bottom of the lake. Tamaracks and black spruce grow on the thick sphagnum mat.

Spruce and tamarack forests growing on sphagnum bogs circle the earth just below the Arctic Circle. Northern Wisconsin is on the southern edge of the region. The same kinds of trees grow in Alaska and Siberia as do in the swamps of our Northern Highland.

After many centuries, lakes fill with decayed sphagnum and other dead plants which grow on the peat mat. Many peat swamps are twenty, thirty or fifty feet deep. Each year more and more plants pile up. The weight of dead and rotting material packs the peat tighter and tighter. Finally the old lake becomes dry land. Birch, balsam, and pine trees replace black spruce and tamarack.

Peat swamps preserve parts of trees and plants. Scientists can learn about plants which



Tamarack and black spruce growing on sphagnum peat moss circle a lake.

lived near the swamp thousands of years ago. Plant information helps us to know about the climate in which plants grew. Layers of peat in Wisconsin swamps are important pages in the history book of the Northern Highland.

The landscape of the Northern Highland is a vacationer's dream. Lakes, forest, streams, and marshy shelters for wild birds and animals are all part of the Northern Highland wilderness.

CENTRAL PLAIN

by Ray Specht

Wisconsin's Central Plain lies south of the Northern Highland. The northern edge of the region is the place where rivers tumble down from the Highland. Waters race through rapids at these piaces.

The eastern part of the Central Plain is a rolling landscape. It has stony hills and lakes or swamp-filled depressions called kettles. There are large lakes near Waupaca and Wautoma. This region, created by glaciers, has become a popular resort area.

Cows are pastured on stony hillsides. Sandy fields are not as rich as land in other parts of the state. Settlers had to clear fields of stones before planting crops.

Because the land was poor for dairying, some farmers

planted Christmas trees. Each year thousands of Scotch and Norway pine are cut and hauled to cities.

The middle part of the Central Plain lies between Highway 51 on the east and the Wisconsin River on the west. This is known as the outwash plain. Sand from melting waters of the glacier was carried here and dropped. Forests grew on this flat plain.

After the forests were cut down, pioneers tried to farm the land. They were successful only for a short time. Soon the soil produced only poor crops. However, some farmers found ways to raise potatoes and other vegetables. They put fertilizer on the land. They began to pump water from wells in order to water crops. In summertime you can see huge "lawn sprinklers" at work. Fine crops of potatoes, as well as green beans, sweet corn, peas, peppers, and cucumbers, are harvested each year.

Trees of the Central Plain include jack pine and scrub oak. One paper mill company at Port Edwards and Nekoosa owns a large plot of land. It is called an industrial forest. The company cuts trees for wood pulp. New trees are planted to replace those cut down. Pulpwood trees grow well in fields where only poor crops have grown.

Flowing southward through the Central Plain is the hardest-working stream of water in America, the Wisconsin

River. Large dams at places on the river from Stevens Point to Wisconsin Dells supply electrical power. Lakes behind dams are good for fishing and boating.

Cranberry marshes west of Wisconsin Rapids and the large wildlife lands northwest of Necedah make up a large part of the Central Plain. This country was once the bottom of the huge glacial Lake Wisconsin. Streams flowing into the lake carried sand. This sand fell to the floor of the lake. After the lake drained, a sandy, flat, marshy landscape remained. Indians and

pioneers found wild cranberries growing here. In the late 1800's farmers began developing cranberry bogs. Frost damages cranberries. To protect plants, farmers flood the bogs with water when there is danger of frost. Some growers use sprinklers, like the ones used for irrigating vegetables, to prevent freezing.

Forests cover much land of the central sand plain west of the Wisconsin River. Most of this low flat area is public land. It is owned by counties as hunting grounds, by the State of Wisconsin as a conservation area or by the federal government as a national wildlife refuge.

Wild animals including deer, snowshoe rabbits, raccoons, and muskrats can be seen on these public lands.

Castle-like or pillar-shaped mounds of sandstone stand high above treetops on the sand plain. Most of them are in the southwestern part of the region near New Lisbon and Tomah. They are called outliers.

Cities and towns of the central sand plain are not large. On a population map the plain is shown to have few residents.

LAKE SUPERIOR LOWLAND

by

Alonzo W. Pond

The Lake Superior Lowland is a deep basin north of the Highland. The bottom of Lake Superior is almost half a mile lower than the hills of the

Highland. Why is there a lowland here?

Long before the glaciers came, a great earthquake shook this region. One section of land fell in. This left a huge trench. After many years this land and the high land around it began to sink. It became the floor of a sea. Sand, soil and gravel filled the trench. Then the sea bottom was pushed up. It became dry land. Later, glaciers came down from Canada. They bulldozed out the soft rock in the deep trench. The ice dug out the basin below sea level.

The glacier began to melt. The wall of ice moved back toward Canada. Finally the basin was uncovered. It filled with water. The melting glacier formed Lake Superior and the other Great Lakes. These waters flowed into the St. Lawrence River and to the Atlantic Ocean.

The water level of Lake Superior lowered. Some land that had been under water became dry land. This is the Lake Superior Lowland. Today it is hilly. Rivers have cut paths across it to Lake Superior.

The boundary between the Highland and the Lake Superior Lowland is a steep hill called an escarpment. Some rivers cut paths through this rock rim. Today more than forty rivers plunge down the north side of this escarpment to the waters of Lake Superior. There are nine rivers in the thirty miles between the Montreal and Bad Rivers.

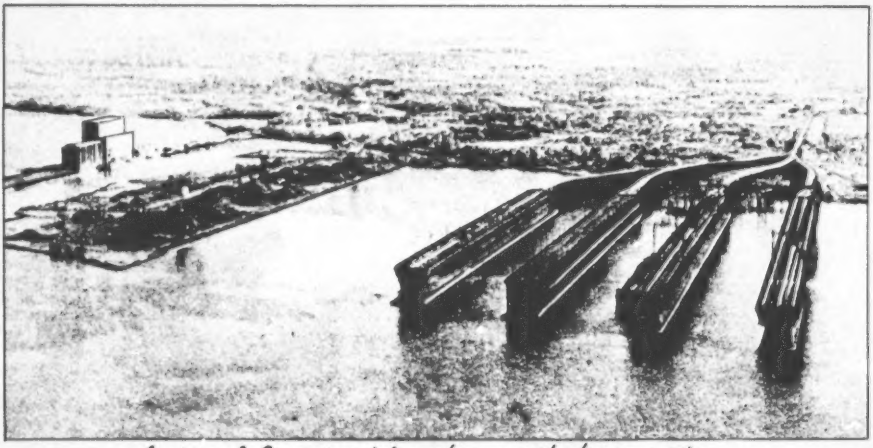
Where rivers cut through the escarpment, there are beautiful waterfalls and canyons. Copper Falls on the Bad River drops twenty-nine feet. The falls give the name to Copper Falls State Park. A quarter of a mile downstream the Bad joins Tyler's Fork River.

The Lake Superior shore has great beauty.

The two rivers race straight at each other like ancient, mounted warriors. They meet head on and join. As one river, they turn sharp corners and flow through a deep canyon to Lake Superior.

To the west is Pattison State Park. There the Black River leaps over rocks and tumbles downhill for 160 feet at Big Manitou Falls. This drop is greater than Niagara Falls, but there the likeness ends. Big Manitou Falls is scenic. However, it is not a straight drop. It lacks the majesty of the Niagara.

Superior is the most important city in the Lowland. It has a natural harbor. The first boat to stop here, the *Algonquin*, arrived in 1845. This



A view of Superior, Wis., showing its large grain elevator on the far left and its ore docks on the right.

little seventy-foot ship was owned by the Hudson's Bay Company. The *Algonquin* had been sent to collect furs. Settlement at Superior began in 1853.

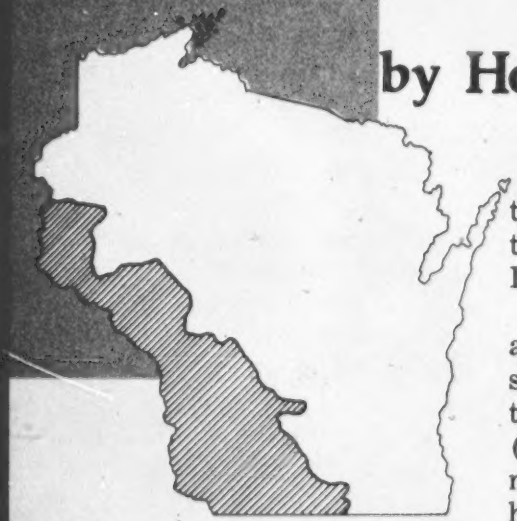
Today Superior is a world port. Ocean-going ships stop to unload and load. The Great Northern Ore Docks in the bay are the largest in the world. They are used to transfer iron ore from special railroad cars to lake boats. The ore is mined in the Mesabi Range in Minnesota.

Iron ore is found through the Lowland. The ore gives a red color to sandstone cliffs in the Apostle Islands.

The first ore docks at Superior were built in 1892. They were made of wood. Steel and concrete have been used to build new docks. As many as 180 railroad cars can line up on the dock. Chutes carry iron to the hold of the ship. Iron ore is heavy. Care must be taken to load the boat evenly.

Although the Lake Superior Lowland region is small, it has an exciting landscape.

WESTERN UPLAND



by Howard Kanetzke

The Western Upland is the roughest, wildest part of Wisconsin. It is mostly in the southwestern quarter of the state. The last glacier missed most of the Upland. It is part of the region often called the Driftless Area.

Early explorers and settlers came here to seek furs and lead. Jonathan Carver was

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the first Englishman to visit the Upland. He stopped at an Indian Village.

"Some mountains stand about fifteen miles to the southwest. I (climbed) one of the highest. For many miles (around) I saw only lesser mountains. They look like haycocks and are free of trees.

Groves of hickory trees grow in the valleys. The hills abound in lead. I saw large quantities of it lying about the streets in the town."

Indians collected pieces of lead lying on the ground. They also dug it from shallow pits.

Indians found smelting a slow job. They dug a pit about two feet deep into a hillside and lined it with smooth stones. A trench led away from the bottom of the pit. Several long narrow stones were placed across the pit to make a grill. Indians put lead ore on this grill. Then they built a fire underneath. The lead melted.

It trickled through the grill to the bottom of the pit. Then it ran out through the trench. The first miners who came to Wisconsin smelted ore this same way.

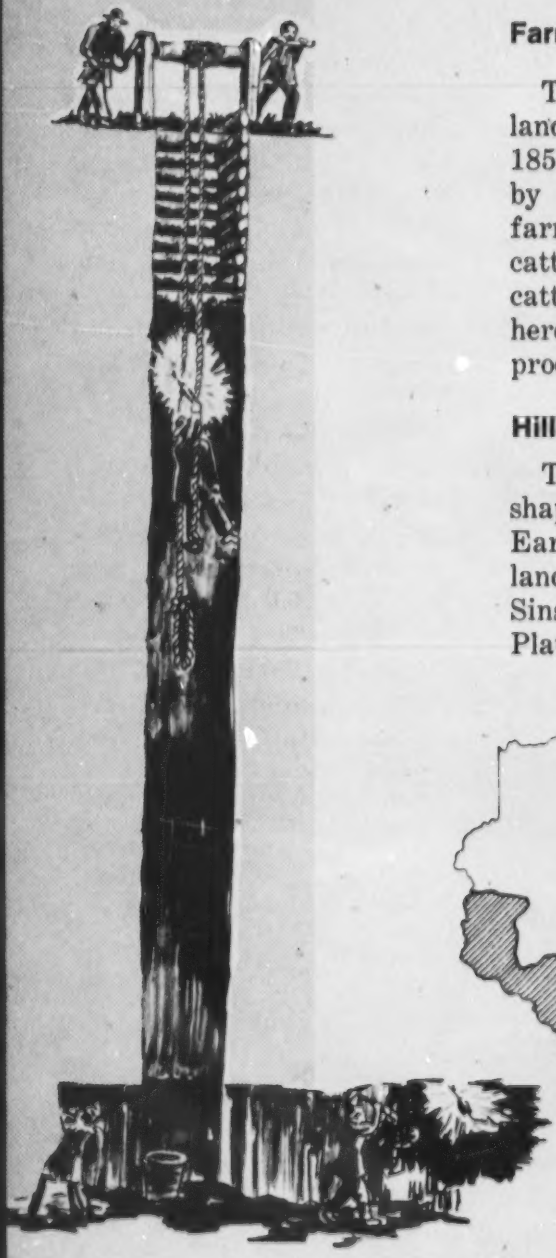
Miners dug shafts that looked like wells. When they struck veins of lead, workmen dug tunnels along the vein. Lead ore was hauled to the shaft and put in wooden buckets. Stout ropes, attached to a windlass above, were used to raise the ore. When tunnels were long, men hauled ore to the shaft in wheelbarrows.

Mining tools were simple. Shovels, picks, gads (tools like crowbars), hand drills, and blasting powder were necessary supplies. Candles set in clay along the rock walls provided light for the workers.

By 1850 most mines in Wisconsin had closed. Some mines filled with water. Then the price of lead dropped. Miners left Wisconsin to try their luck in the gold hills of California.

Modern Mining

Today, mining is different. Huge machines both dig and haul ore. Trucks are driven into mine tunnels to be loaded.



Farming

The first farmers in the Upland raised wheat until about 1850. Then crops were spoiled by bugs and disease. Many farmers began to raise dairy cattle. Today, herds of beef cattle are fattened for market here. Many fields in this area produce animal feed crops.

Hills

There are several gumdrop-shaped mounds in the Upland. Early travelers used these as landmarks. The Blue Mound, Sinsinawa Mound, and the Platte Mound all wear caps of

hard rock. Wind and water have not yet worn away these protecting layers of rock.

In southern Trempealeau County is a low plain along the Mississippi River. A single tree-covered island stands above the river. Indians called it the "soaking mountain." Early Frenchmen pointed to it and said, "La montagne qui trempe a l'eau" or the hill which soaks in the water. The modern name for this place is made up of the last words of the French phrase.

This high hill was once a part of the Mississippi River bluffs in Minnesota. But river waters sliced away part of the bluffs. Trempealeau was left standing alone. Later the Mississippi River changed its channel to the west side of the hill. Since the river is the dividing line between the two states, Trempealeau Hill is in Wisconsin. It is a part of Perrot State Park.

Water

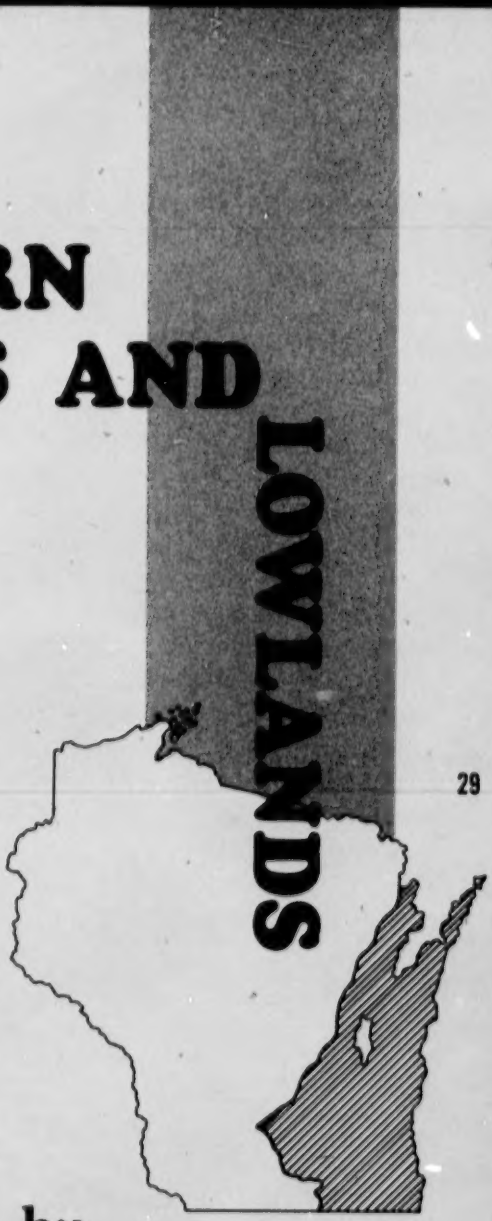
The Western Upland is a lakeless region. Rivers carry water away. Low places are well-drained. The two lakes in the Upland are really wide places in rivers. Lake Pepin and Lake St. Croix were formed by earth dams that partly blocked the St. Croix and Mississippi Rivers.

Cities

La Crosse is the largest city in the Western Upland. Located on the Mississippi River, it has long been a trading center. Prairie du Chien, Lancaster, Platteville, Dodgeville, and Richland Center are important towns.

Because the Western Upland has many different landscapes, it is an interesting region to visit.

EASTERN RIDGES AND LOWLANDS



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by
Howard Kanetzke

Many pioneers chose to settle in the Eastern Ridges and Lowlands area, in southeastern Wisconsin. Lake Michigan borders the region. Immigrants came by ship to lake ports. The land they found was ideal for farming — mild weather, slow rivers, rolling hills, and rich prairie soil.

Ports developed along the Lake Michigan shore. Kenosha, Racine, Manitowoc, Sheboygan and Green Bay have greeted both sailing ships and modern cargo freighters. In addition to settlers, the early ships also brought goods. Their hulls were loaded with Wisconsin grain and lead or products like brooms for the return trip.

As early as 1871 a Milwaukee reporter wrote: "People come to Milwaukee because

they can shop better, dress better, give parties easier, hear better concerts, and see more sights."

Carpenters, machinists, painters, clerks, and other workers came to port cities. Other men and women arrived because they wanted to live in these growing places. Today the port cities are homes to important industries. Items produced in Wisconsin are sent to market from the ports. Factory workers manufacture leather products, autos, heavy machines, plastics, clothes, chemicals, and electrical equipment.

Since the St. Lawrence Seaway opened, port cities have grown. Kenosha, Milwaukee, and Green Bay handle general cargo. Racine and Port Washington receive coal and oil for local industries. Coal and grain are unloaded at Manitowoc. Sturgeon Bay sends Wisconsin canned goods to all parts of the world. Green Bay receives materials needed by factories in the Fox River Valley. Small fleets of fishing ships can be found in some harbors.

The Fox River Valley is also part of the Eastern Ridges and Lowlands area. Early traders came to Green Bay. They used the Fox River for hauling furs.

The Fox and Wolf Rivers and Lakes Winnebago and Butte des Mortes are all part of this river system. Lake Winnebago was scooped out by the glacier. Twenty-eight miles long, it is the largest inland lake in our state. The glacier also created a new path for the Fox River between Lake Winnebago and Green Bay. The new route has eight rapids — places where the water tumbles down over rocks. These are the best waterpower sites in Wisconsin. Neenah-Menasha, Appleton, Kaukauna, and DePere

are located on the larger rapids. Kimberly, Little Chute, Combined Locks, and Little Kaukauna developed at the four smaller ones. Mills in the cities use water power to make paper, plywood, and furniture.

Factories in the industrial cities of Fond du Lac and Oshkosh produce shoe leather, machine tools, stockings, and axles.

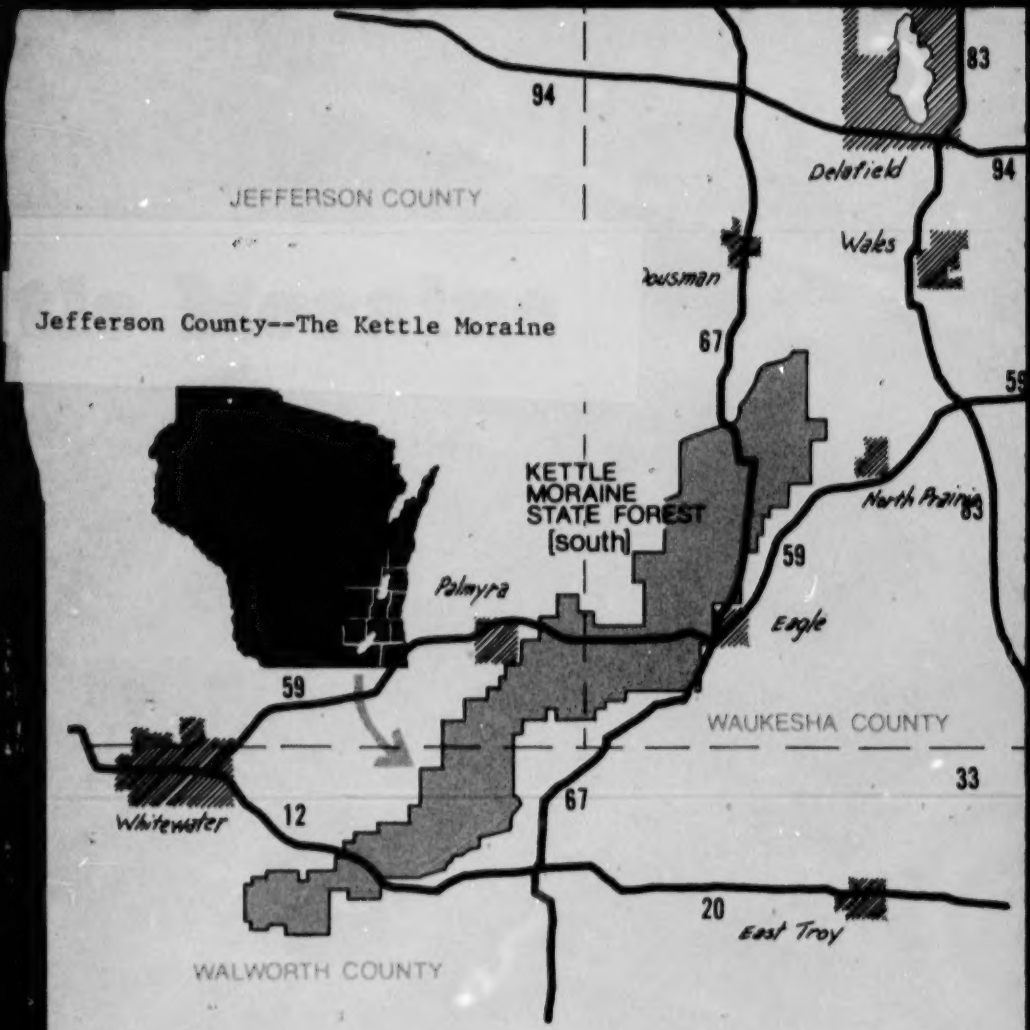
Madison, Beloit, and Janesville are also part of the Eastern Ridges and Lowlands. Madison, the state capital, has many government offices. These cities produce surgical instruments, writing pens, shoes, farm equipment, dairy products, and machine tools.

Farming is big business. Wisconsin's richest soils cover the prairies and rolling hills of the region. Oats, green peas, sweet corn, and potatoes are common crops. In addition, hundreds of acres of cabbage, carrots, and onions are harvested each year. Milk for butter and cheese is important throughout the Ridges and Lowlands region.

In addition to cities and farms, the Eastern Ridges and Lowlands have special recreational areas. You can visit the Kettle Moraine State Forest and follow one of the many hiking trails.

Horicon Marsh is in a low place or basin formed by the glacier. In 1842 a dam was built to make part of the marsh a lake. The lake was later drained but it never completely dried. Peat in the marsh is five to six feet deep.

Today the Horicon National Wildlife Refuge and the Horicon Marsh Wildlife Area preserve the area. Visit them in spring or fall. Migrating geese and ducks wing overhead in endless waves.



Long ages ago the last glacier began to cover Wisconsin. It moved forward with several thick, wide lobes (giant arms) of ice. The Green Bay Lobe scooped out Green Bay while the Lake Michigan Lobe dug a large lake bed. These two huge fingers of ice met along a line between Walworth and Kewaunee Counties.

Here the ice cracked, heaved, buckled, and finally melted. The Ice Age ended in Wisconsin about 9,000 years ago.

Great amounts of sand, gravel, and rocks formed a long line of hills and ridges called a moraine.

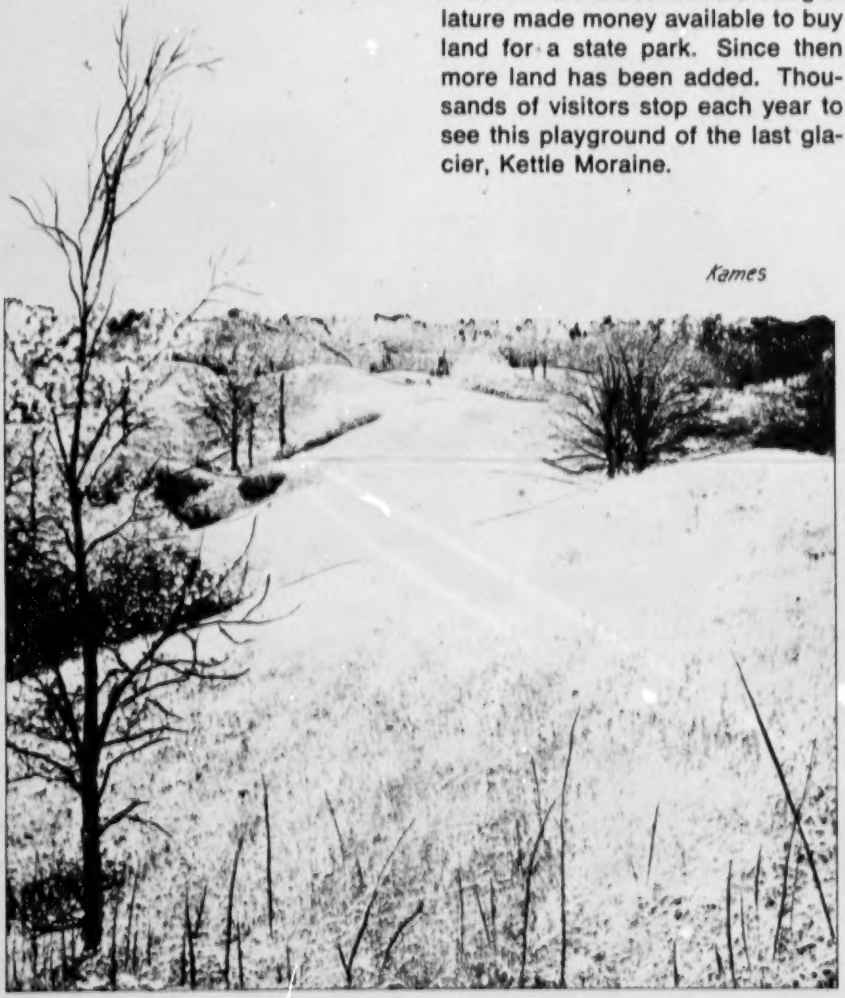
Sometimes large pieces of ice were buried in the moraine. When these melted, deep holes called kettles appeared.

a kettle lake

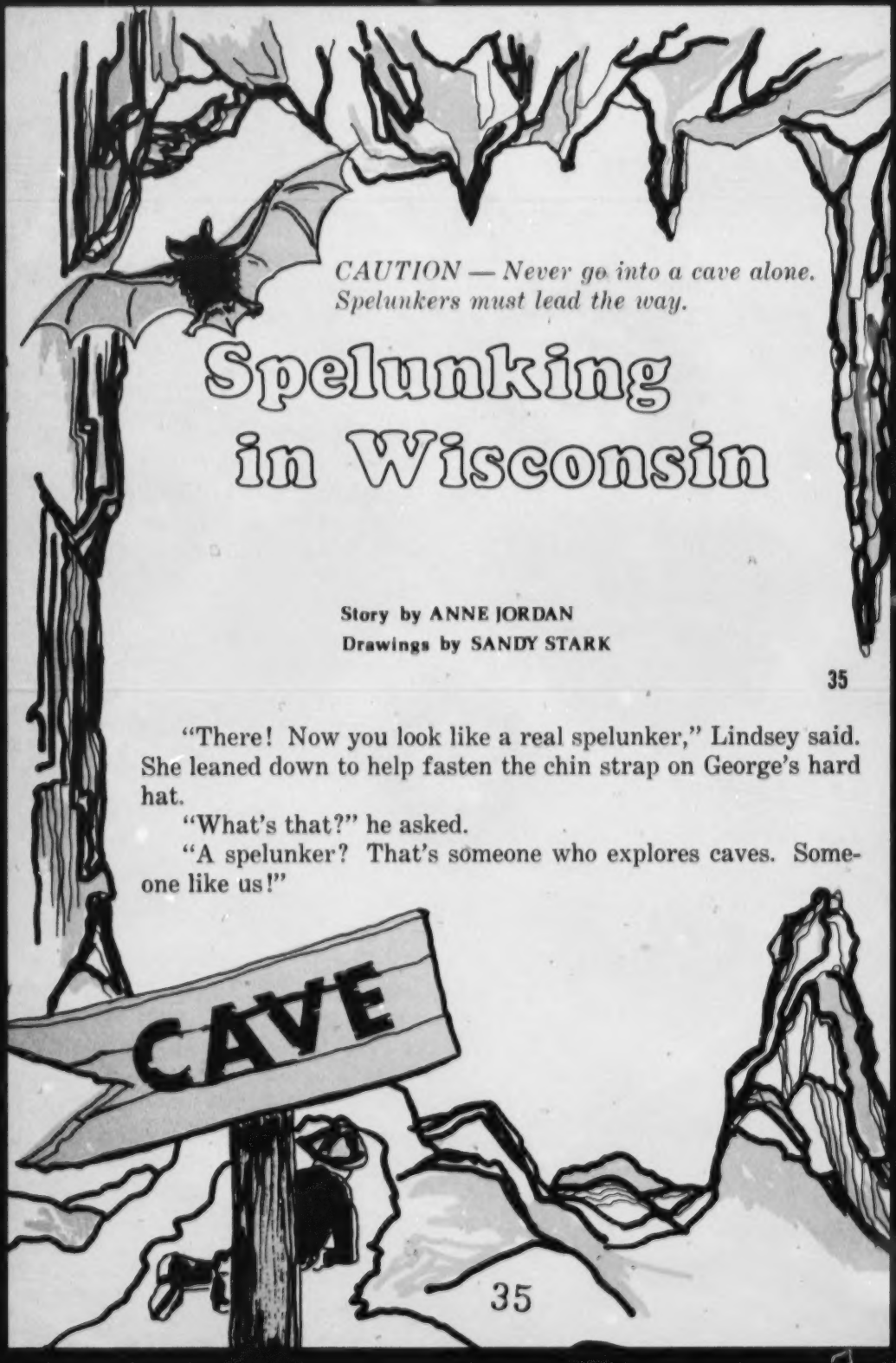
Today some kettles are swamps. . . . . And others are lakes.

Some hills were formed when water carrying sand and gravel ran down through holes in the glacier. Slowly these holes filled with stones to form large hills called kames. Lapham Peak, the highest place in southeastern Wisconsin, and Holy Hill are kames.

In 1937 the Wisconsin State Legislature made money available to buy land for a state park. Since then more land has been added. Thousands of visitors stop each year to see this playground of the last glacier, Kettle Moraine.



Kames



CAUTION — Never go into a cave alone. Spelunkers must lead the way.

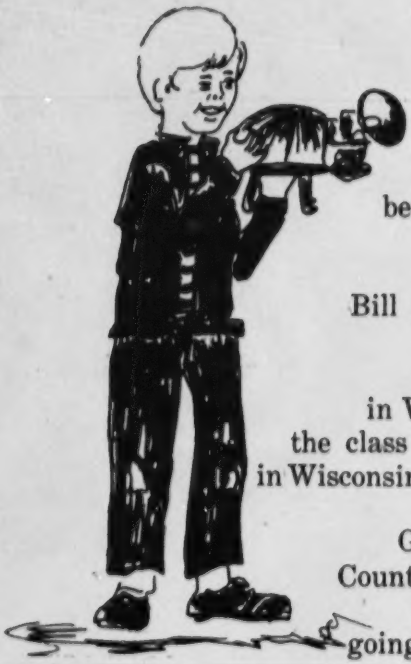
Spelunking in Wisconsin

Story by ANNE JORDAN
Drawings by SANDY STARK

"There! Now you look like a real spelunker," Lindsey said. She leaned down to help fasten the chin strap on George's hard hat.

"What's that?" he asked.

"A spelunker? That's someone who explores caves. Someone like us!"



Lindsey's coveralls were covered with dirt. The paint on her hard hat was chipped. It looked to George as though she'd been in lots of caves. This cave was George's first.

George, Lindsey, Barb and Bill pulled on boots and old jackets. The sun shone overhead. George was a fifth grade student in Waukesha. His teacher had given the class an assignment: "Go somewhere in Wisconsin you've never been before. Find out about its history."

George's friend had gone to Door County. A girl visited Mineral Point. But no one else had thought of going *down inside* Wisconsin. George thought he was pretty smart.

George's parents told him that his cousin Lindsey explored caves. She was going to the University in Madison. George called to see whether she could help him.

Lindsey, Barb and Bill were all members of a club called the Wisconsin Speleological Society. People who study caves are called *speleologists*. Members of this club make maps of caves for other people to follow. They also teach people how to protect caves.

Over the phone, Lindsey had told George that there were no caves near Waukesha. Nearly all caves in the state, she explained, were in the driftless area. She promised to mail him a map. The driftless area was not covered by the last glaciers. The weight of glacial ice sheets crushed caves. George decided to visit the driftless area with the cave club members. So they had come to this lumpy land near Richland Center, Wisconsin's cave country.

October 18
Four cavers went into the cave at the top of the ridge at 10:30 a.m. If not out by 1:30, please call Jack Mundt, 742-9901, or Scott Edwards, 644-5119.

Bill Hendrix

Bill was writing out a note. He tucked it under the windshield wiper. "There," he said, "just in case."

They headed up a steep hill. The land was rocky and spotted with brush. Before long, they reached a clearing edged on one side by a rock wall. In the center of this wall was a small, dark hole. George peered inside. A narrow passage slanted back, turned and disappeared.

"Well," thought George, "at least I'm the smallest person here!"

Lindsey helped George light his lamp and clip it to his hat. Everyone put on gloves.

"I guess we're set," Barb said. "George, why don't you follow Bill and I'll follow you." Lindsey went first.

One by one—
they crawled
slowly—
head first—
into the hole.
The light began to fade.

"This part is called the twilight zone," said Bill over his shoulder. Cold damp clay and small stones pressed against George's knees. The cave smelled like a cellar. "Yes," he thought, "the earth's little cellar."

The tunnel turned a corner and grew more narrow.

"We'll have to squeeze here," said Lindsey. Bill lay down and pushed himself through the little space. George followed. His toes pushed. His arms pulled. His clothes hissed across the wet rock. He slid through, just like a big lighted worm!

Then the space grew larger. George's head popped up in a small underground room. It was big enough to stand in. The lamps made the walls glow. The walls looked as though they were sloshed with white and brown paint. Strange icicle shapes hung from the ceiling. The floor was strewn with rocks. On one side was a small, clear pool.

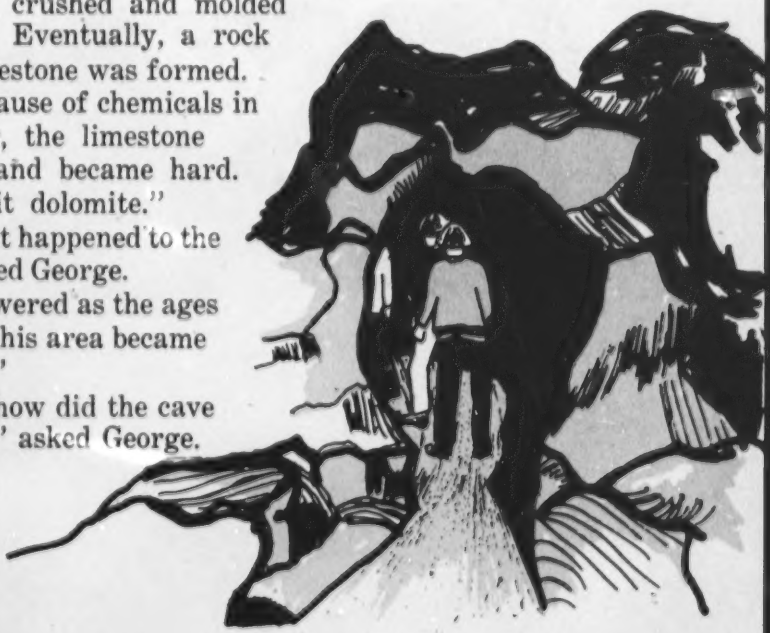
"This room has some stories to tell," said Lindsey. She pulled a small flashlight from her pack. Sitting on a rock, she flicked her light over the walls. She began the story of the cave, just as though she were reading it off the wall.

"This rock is called dolomite. See how it's made up of layers? Once this whole area was under a sea. It was full of sea creatures with shells made of lime. As they died, their shells fell to the bottom. Over thousands of years, the shells piled up and were crushed and molded together. Eventually, a rock called limestone was formed. Then, because of chemicals in the water, the limestone changed and became hard. We call it dolomite."

"What happened to the sea?" asked George.

"It lowered as the ages passed. This area became dry land."

"But how did the cave get here?" asked George.



"Well," said Bill, "caves can be formed in lots of ways. This one was dissolved out of the rock by water dripping through cracks. That takes a long time." Lindsey played the light on the ceiling. Bill continued.

"Long ago, water began creeping through the soil above. It formed weak acid that can dissolve dolomite. Each drop carried away a little bit of rock. Years and years went by. Slowly the crack got wider. Then more water came through. After thousands of years, a crawl space was made. Then a room."

"Not all caves are made that way," said Barb. "Sometimes caves are dug by rivers. Of course that works much faster."

George looked at the cave walls.

"How cold is it in here?" he asked.

"Oh, it stays about 46° all year round," said Barb.

"But there are icicles," exclaimed George.

Lindsey laughed. "Those aren't icicles. They're called stalactites. They're made of rock. Come and see." She and George crossed the room.

"See, this stalactite is wet," said Lindsey. "Water made this stalactite. But it all happens slowly. First a drop of water seeps through the ceiling. Water contains small amounts of minerals. Each droplet deposits a bit of the mineral on the ceiling. The water falls off and another drop flows down. And another. After many years, the minerals form a hollow tube. We call it a soda straw." She shined the light on a long skinny form. "Different minerals cause different colors in these new shapes." Lindsey's light glowed on the walls.

"Then," she went on, "sometimes the hole is plugged. Water flows along the outside. The formation grows wider and becomes a stalactite."

"How old are these stalactites?" George asked.

Lindsey pointed at one that was an inch long. "See this one? It's wet, so it's still growing. But it probably looked just this size on the day you were born. Now, say you live to be 100 years old. Come back to the cave. It will probably be only one

inch longer! That's why spelunkers have to be careful not to bang them with their hats. The cave won't grow a new stalactite in a minute!"

George noticed a pillar shape nearby.

"Some of them are growing up from the floor, too," he said.

"Those are called stalagmites," said Lindsey. "They often grow up far enough to meet a stalactite. Then they form a column. But if the water stops dripping, the shapes will stop growing. Then we say the formations are dead. I know of a cave where a road was built on the ground up above. No more water could get through that section, so everything stopped growing. Sometimes stalactites stop growing just because a person touches them. The oil on our hands can stop the flow of water."

They sat quietly for a while.

"Later I'll show you pictures of other kinds of rock forms found in caves," she said. "Some of them are really strange."

"How many caves are there in Wisconsin?" asked George.

"No one knows! There are probably many we haven't found yet. But so far, people have discovered about 250."

"Oh," said George. "Do other states have caves like these?"

"Oh, yes," exclaimed Lindsey. "Some states, like Kentucky, have huge caves. Much larger than ours."

"Well," said George, "you can surely tell a lot about time and the earth in caves."

"Yep," said Lindsey. "That's part of what speleologists study. They also study creatures who live in caves, like *that* one right up there." She pointed to a small dark shape on the ceiling.

"What is it?" asked George.

"A bat, sleeping soundly," answered Lindsey. "I won't flash the light on it, or bother it. After all, it lives here. We don't."

"Hey," said Barb. "How about a snack?" They all gathered around. Out of their packs came a box of raisins, a bag of crackers, (mostly broken), and four large chocolate bars. George was starved. Plock . . . Plock . . . Durble. . . . Water dripped into the pool.

"Oh," said Bill, "sounds like a *hodag*." He grinned.

"What's a hodag?" asked George, glancing around.

"What! You don't know about hodags! People say they live in caves. They love to make strange noises. Yes, sir. Once I was the last person to go through a tiny tunnel. Guess what I heard behind me! A little voice said 'Hey, wait for me!' I turned around, but no one was there!"

"Oh," said George, "you made that up."

42 "People love strange cave stories," said Lindsey. "Sometimes they aren't true!"

While they talked, the water dripped.

"George, want to see some *real* darkness?" asked Bill.

"Sure," he said, and each one shut off his lamp. Blackness! All around. George could see no shapes or shadows.

Plock . . . Plock . . .

"Hello?" said George, just to be sure.

"Hi!" answered Lindsey, and the lights blinked on again.

"Do you think I could bring my dad and some friends here?" asked George.

"Well," said Lindsey, "that could be dangerous without people who know about caves. If you're interested in caves you must always find cavers who know what they are doing. Then you can visit the caves together. That way you are safe while you're exploring."

"Say," said Barb, holding her watch in front of her light, "we need to go. It's nearly 12:30."

"Ok," said Lindsey. "But let's go back a different way."

Bat sleeping in a cave

43

George's knees felt raw and sore. Rocks and stones went by. Then he heard Bill's voice.

"I see light ahead."

Oh, the twilight zone again, thought George. Out they crawled, into the sun and warm air. George's jacket was brown, like Lindsey's.

"I thought you looked like a spelunker before. But now you *really* do," she laughed.

As the car bumped along the road, George watched the landscape. Maybe more caves are under there, he thought. The sun was warm. He thought about the dripping water and the dark and the cold. Then he remembered his assignment.

"Go to a place where you've never been before. Find out about its history."

And George smiled.

Dr. Cory Thomas, Mrs. Reginald Kilps and members of the Wisconsin Speological Society gave aid in preparing this article.

Wisconsin Rivers

About Rivers

Rivers are an important part of Wisconsin's geography. They carry water from place to place. Each river has a beginning (known as the source) and an ending (called the mouth). Some rivers flow in beds at the bottom of a valley.

River beds are sometimes straight. Others twist, curve, and crisscross in the valley. The river bed is the area that is usually filled with water. Edges or sides of the river are called banks.

Some parts of rivers are deeper than others. These deep places are like rivers within rivers. They are called channels. At dry times, rivers have water only in their channels. The rest of the river bed is dry.

By looking at the countryside, you can get clues about the rivers that flow there. Flat
46 places usually have streams that move slowly. They often have curving routes. Rivers in hilly, rocky places are different. Their waters move more swiftly. At times water tumbles over rocks. These places are called rapids. At other times, water falls down to a lower level. Have you seen waterfalls? Swift-moving rivers often have straight routes.

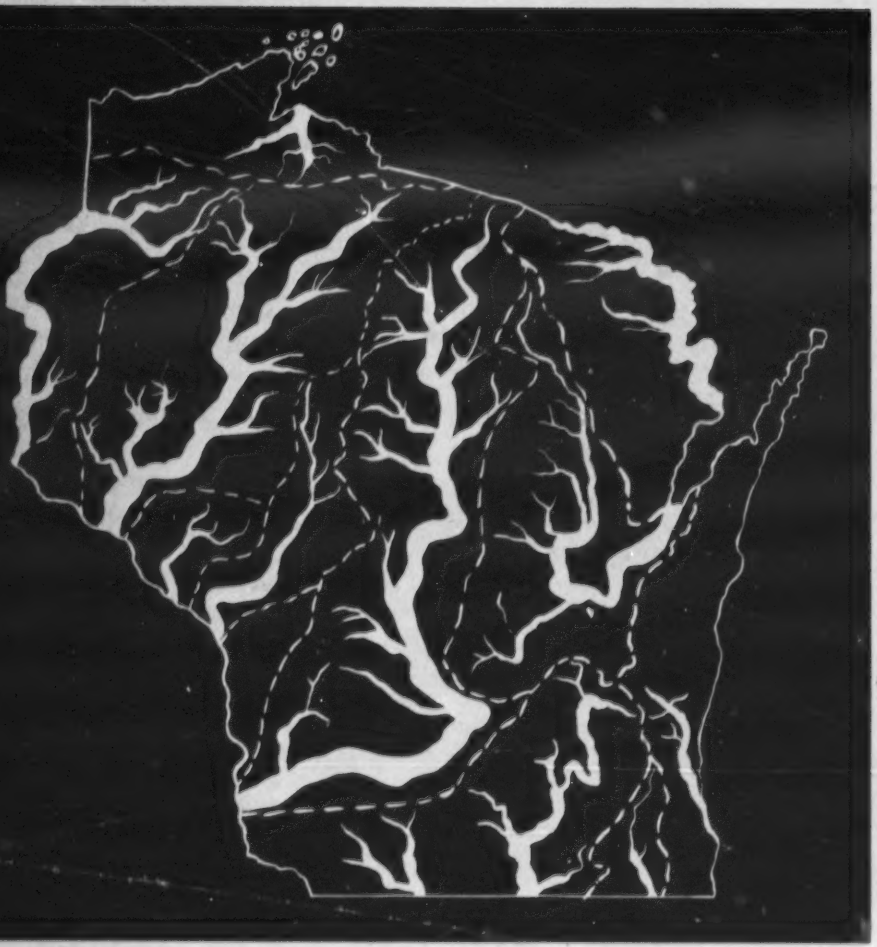
Long rivers often flow through many different landscapes. At times these streams are swift. Then they slow and are lazy. Look at a map. Find rivers that flow in and out of lakes.

Rivers usually widen as they get close to their mouth. This is because other streams have joined them along the way. So they must hold more water. Rivers that flow into larger ones are called tributaries. Some rivers, like the Wisconsin, have many tributaries. We call a river and its tributaries a river system. River systems collect water from a large area and carry it to the end or mouth of the system.

Become acquainted with rivers near your home. Observe rivers as you travel.

Wisconsin is covered with a network of lakes, streams, and rivers. The water in them is seeking to reach the ocean. Some rivers flow into the Great Lakes. Others empty their waters into the Mississippi River.

Rivers were the first highways through Wisconsin. Indians, explorers, and missionaries traveled over these ribbons of water. Later, lead and lumber were hauled over streams to market. Steamboats, carrying cargos and



47

passengers, made regular stops at river towns.

THE WISCONSIN RIVER

The Wisconsin River cuts our state nearly in half. An Indian legend says the Great Serpent Spirit came out of the north in search of the sea. The path made by this creature became the bed of the Wisconsin River. When the Serpent lashed its tail, water splashed over the land, making thousands of lakes. Farther south

the Great Serpent Spirit wriggled through a crack in the rock. The place where his body split the rock apart is called the Wisconsin Dells.

48 Only about sixteen feet wide at its headwaters, the Wisconsin River is a giant by the time it arrives at Prairie du Chien. During this 430-mile-trip the river drains one quarter of the state's land. The Wisconsin is one of the few major rivers in the country found within the borders of a single state.

CHIPPEWA-FLAMBEAU RIVER SYSTEM

The Chippewa-Flambeau River system also flows into the Mississippi River. The rivers gather water from a large area.

The Upper Chippewa and Flambeau Rivers join in Rusk County. From here to the Mississippi the water is called the Chippewa River.

The upper part of the Flambeau is called the Manitowish. It is a slow stream which flows quietly from one lake to another. It wanders through swamps and wild rice beds. Later the Bear and Turtle Rivers join its waters. The stream then leaps and rushes over rocky rapids. Sportsmen call it the best canoeing river in the midwest.

THE ST. CROIX RIVER

Wisconsin and Minnesota share the St. Croix River as a boundary. In early days the St. Croix was part of a favorite Indian canoe route connecting the Mississippi River with Lake Superior.

THE FOX-WOLF RIVER SYSTEM

The Upper Fox begins in Green Lake County. It flows almost to the Wisconsin River.

THE ROCK RIVER SYSTEM

The Rock River begins in Fond du Lac County. It flows southward into Illinois. Many streams join the Rock in its travels through Wisconsin and Illinois to the Mississippi. The Pecatonica is one of the largest tributaries.

Then it turns back eastward to empty into Lake Winnebago. The Upper Fox is a slow-moving, wandering stream. The Lower Fox runs over falls and rapids between Lake Winnebago and Green Bay. Years ago a series of locks made it possible for boats to travel up the Fox from Green Bay all the way to the Wisconsin River. The Fox flows through the state's second most important manufacturing area.

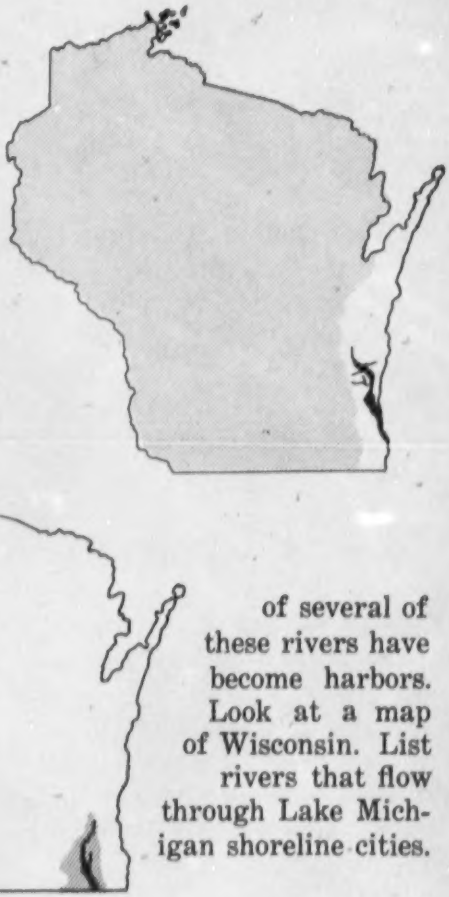
THE ILLINOIS FOX

50

The Illinois Fox or Pishtaka River begins in Waukesha County and flows southward through Racine and Kenosha Counties.

STREAMS ENTERING LAKE MICHIGAN

Many short streams rise in eastern Wisconsin and flow to Lake Michigan. The mouths



of several of these rivers have become harbors. Look at a map of Wisconsin. List rivers that flow through Lake Michigan shoreline cities.

STREAMS ENTERING GREEN BAY

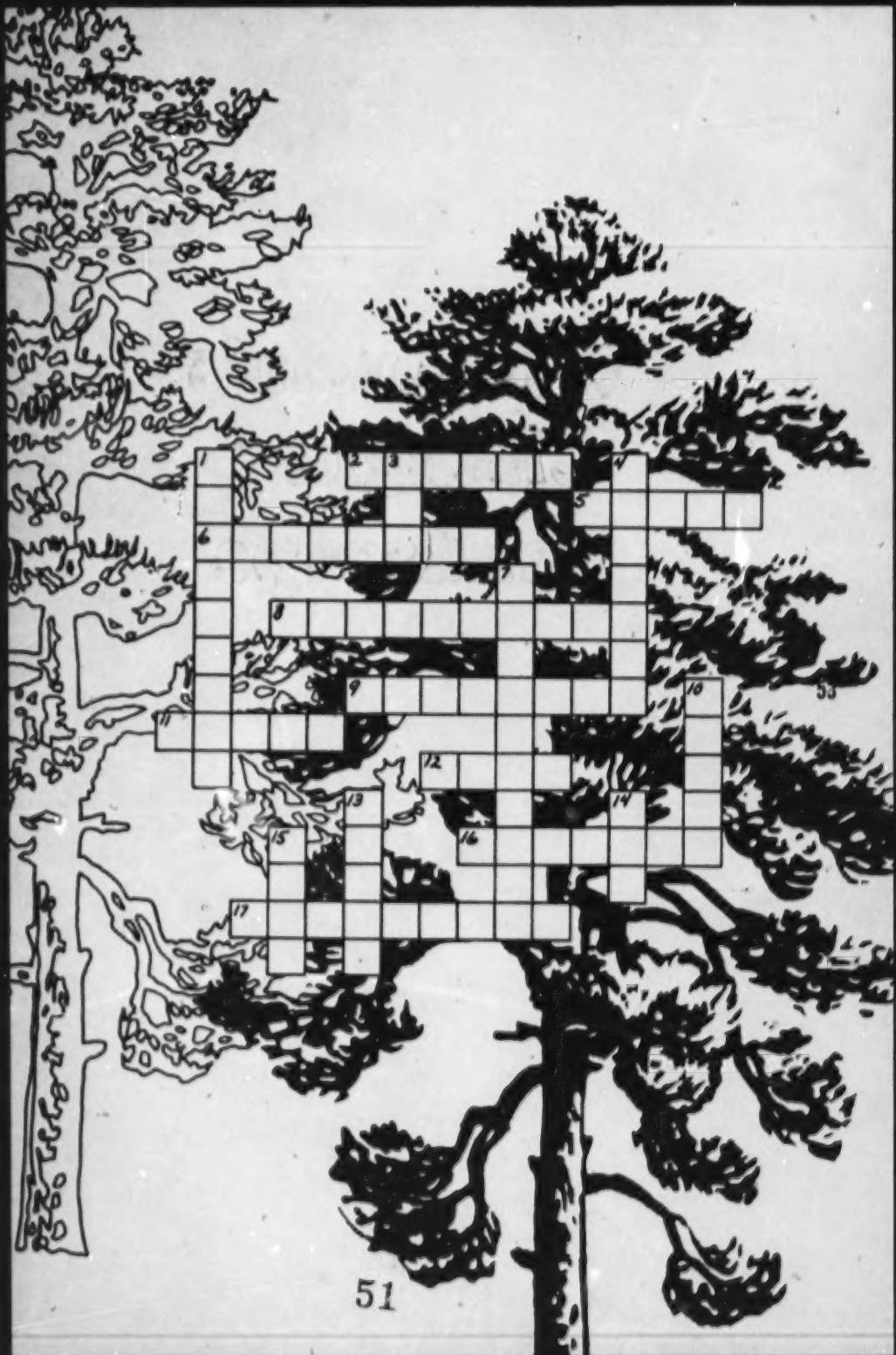
Two rivers, the Menominee and Brule, make up part of the northeastern boundary of the state. Along the fast-moving waters of the Menominee are many power plants. The Oconto and Peshtigo Rivers also empty into Green Bay. Years ago fresh-cut logs raced downstream to lumber mills on these waters each spring.

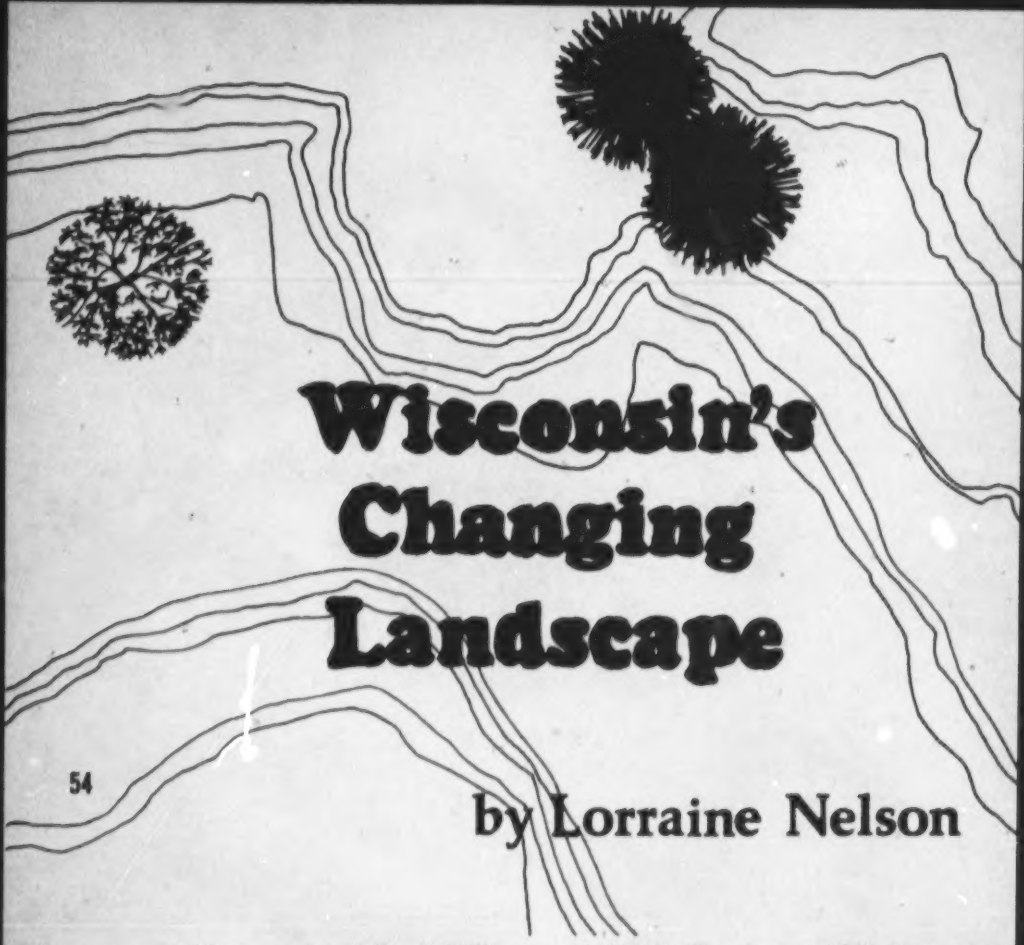
STREAMS ENTERING LAKE SUPERIOR

Many streams flow north to Lake Superior from the Northern Highland. They spill over rocky hills to the Lake Superior Lowland. The Poplar, Iron, Flag, White, Bad, and Montreal Rivers are all colorful and swift.

CROSSWORD PUZZLE

1. First ship at Superior
2. The beginning of a river
3. _____ docks at Superior
4. Lake Superior _____
5. Arms of the glaciers
6. Nature's bulldozers
7. Cave explorers
8. Latin for "writing about the earth"
9. Northern _____
10. Central _____
11. Rivers usually _____ near their mouths
12. Soils of the Central Plain contain much _____
13. Material dropped by glaciers is called _____
14. _____ Banks is north of Green Bay
15. Cavers wear _____ hats
16. _____ Upland
17. Wisconsin's famous _____ Area is an "island."





Wisconsin's Changing Landscape

54

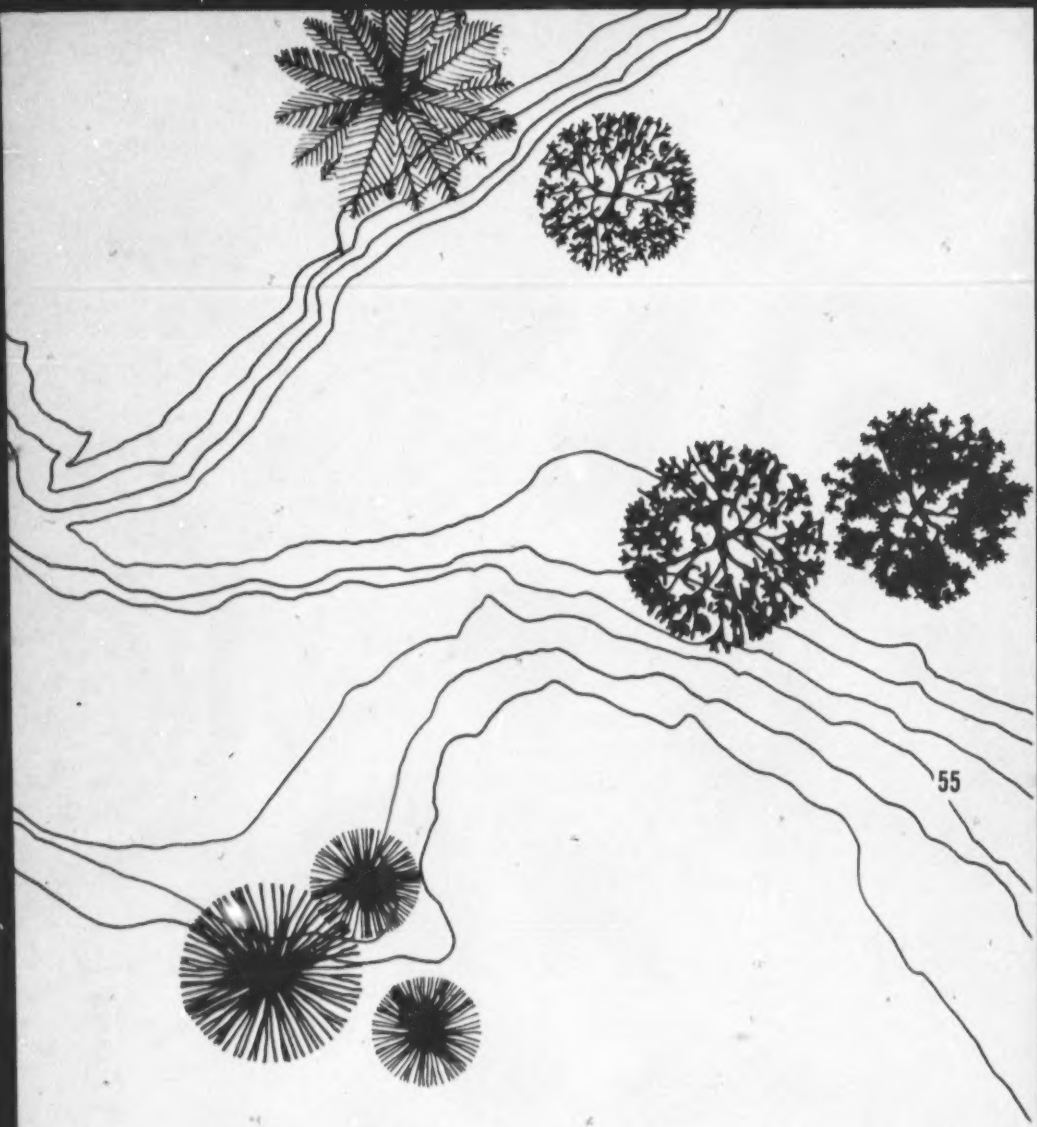
by Lorraine Nelson

"Not another hike," Billy complained. He was at "Y" Camp near Boulder Junction, Wisconsin. Billy wanted to go fishing. It seemed that all he had done since arriving at camp a week ago was hike, swim, or make rock jewelry in the craft shop. "Do I have to go?"

"Of course. Besides we're going to learn about trees. It might be fun."

Billy gave in. He joined ten boys. Their leader Bob started down a trail leading away from camp. When they reached a shady spot, Bob stopped.

"We're going to study different kinds of trees and plants today. You're all from the Milwaukee area. Notice how different the trees here are from those at home. Most of these trees are evergreens.



The hike lasted about two hours. Then the boys were free to do what they wanted for the rest of the morning.

"Yippee! Let's go fishing," Billy shouted. And off they went.

Billy's three weeks at camp went quickly. He was soon home in Hales Corners.

"You know, Dad," Billy said one morning, "Bob said the trees and plants we saw at camp were different from those here —and he's right. I don't see many pine trees. But there are lots of oak and maple. Why is there such a difference?"

"I'm not certain," his Dad replied. "Let's go down to the public library tonight and see what answers we can find."

At the library that evening they went to the children's section.

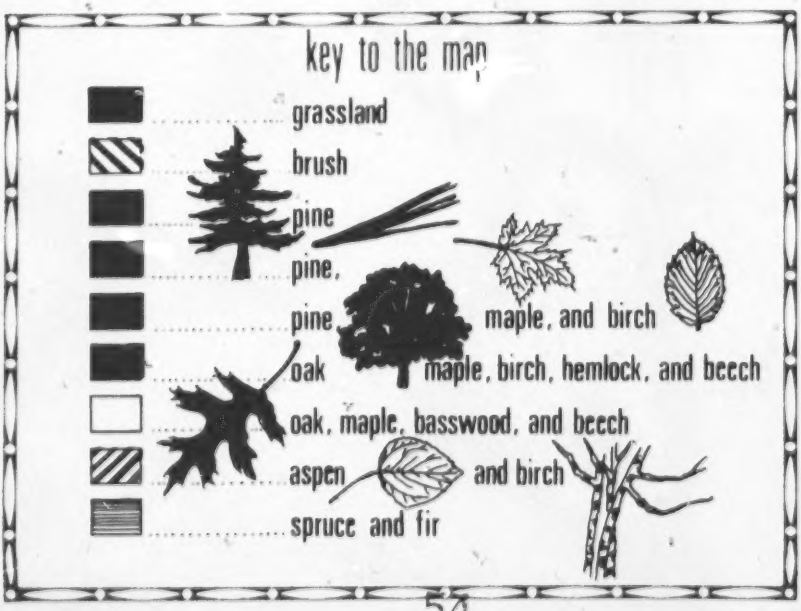
"Gee, Dad, there's nothing here. All these books just show pictures of trees. But look! This one says that climate does make the difference in trees that grow in various places."

"Come on, Billy. Let's see if they have anything in the adult section."

A book, *The Vegetation of Wisconsin* by John T. Curtis, was listed in the card catalogue. They found it on a shelf. Billy opened it to the table of contents page.

"I think this chapter, 'The Effect of Man on the Vegetation' might be helpful," Billy's dad said.

56 "Look. Here it tells how the Indians changed Wisconsin's vegetation. The Indians didn't put out fires except ones near their villages. Just think, a fire might burn hundreds of acres before it stopped.



"Indians grew a few crops. They cleared spaces for corn to grow. So they changed the land in small areas

"Indians also brought new plants like Canada Plum to Wisconsin. Some tribes played a dice game with the large seeds of the Kentucky coffee tree. They carried the seeds with them when they moved. Some seeds were lost. Now Kentucky coffee trees grow in Wisconsin.

"Mr. Curtis says that settlers also changed the vegetation. They did it in a much shorter period of time than the Indians. After 1850, fire wasn't such a big problem. Settlers knew how to control fires. Also plowed fields don't burn as freely as woods or prairie. Ax, plows, and cattle also changed Wisconsin's plants. Early settlers chopped down trees for cabins and fences. They cleared land for crops. Later, settlers moved to the rich prairie soil. Often they let a corner of their property grow into a woodlot for fuel and building materials. Look at this—there was more forest land in southern Wisconsin in 1950
58 than one hundred years earlier!

"Settlers brought in some weeds. They also introduced timothy, white clover, Kentucky bluegrass as well as asparagus, apple, horseradish, buckwheat, parsnip, and carrots. Wow, that's hard to believe!

"Mr. Curtis mentions the wasteful cutting of trees in the north. Lumbermen cut down trees without thinking of the future. Fires burned large areas. There were few seed trees left for replanting. That is why there's a lot of pin cherry, aspen, and white birch in the north—they grow easily in the soil.

"Billy, look. This is interesting. The Indians left Wisconsin's soil covered with plants. So soil erosion was no problem. But settlers cut trees and plowed big fields. Now we have not only different plants—but soil erosion also."

"I guess the settlers changed the land more than the Indians did."

"It looks that way," replied his father. "Now we must rely on good planning and conservation ideas to prevent damage."

PLACE-NAMES in Wisconsin History

Have you ever looked at a name on a Wisconsin map and thought, "What a funny name?"

Perhaps you can find out what the name means. Why was a town given that name? Wisconsin has many different kinds of place-names. Each tells something about our history. Some names were brought with settlers who came from faraway places. Others recall the names of early settlers.

Prairie du Chien is the name of a city and a township. Both are located along the Mississippi River in the southwestern part of the state. The name is French. It tells us that French explorers or settlers lived here. Different spellings can be found in old records — Prairie des Chiens and Prairie du Chien. The two spellings have different meanings. Prairie des Chiens means "prairie of the dogs." One writer states there were many prairie dogs when the French first arrived. The other name,

by
Jane A. Smith

Prairie du Chien, is explained in this way. When Frenchmen arrived, there was a village of Fox Indians on the prairie. The village chief's name was Alim in Fox, Chien in French or Big Dog in English. So the French called it "Dog Prairie." Prairie or plain describes the flat land at this place.

Sometimes several names have been used for one area. Prairie du Chien was also known as Fort St. Nicolas after a trading post. Fort Shelby and Fort Crawford, both military forts, were also located here. The Indians probably also had area names which were never written down.

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Another French name, Fond du Lac, has been given to a city, a township, and a county. All are located on the southern shores of Lake Winnebago. Frenchmen started a trading post here. Fond du Lac is French for "end or bottom of the lake."

Meanings of Indian place-names are often hard to discover. This is because some Indian languages are no longer spoken. We have to check early word lists which do not always copy the exact Indian sounds. One such place-name is the Ojibwa word, Koshkonong. This name has been given to a lake, a creek, a large prairie, a township, and a small village. Frederic G. Cassidy, a University professor, searched for the meaning of the word. He found many explanations. To learn the true meaning, Professor Cassidy wrote letters to experts. Reverend James A. Geary spent many years studying the Ojibwa language. Harry Lincoln spoke Ojibwa. The experts gave these meanings: "where there is heavy fog," "where it is closed in by fog," or "sheltered place behind a windbreak where fog might remain." All of these describe the region of Lake Koshkonong.

Red Banks is located about twelve miles north of the city of Green Bay. This name describes the landscape. Look at a map. Find a body of water also called Green Bay. Hills along the shores of the bay are called banks. These banks are made of red clay soil.

Indians and early explorers traveled by canoe. They

Red Banks, Wis.

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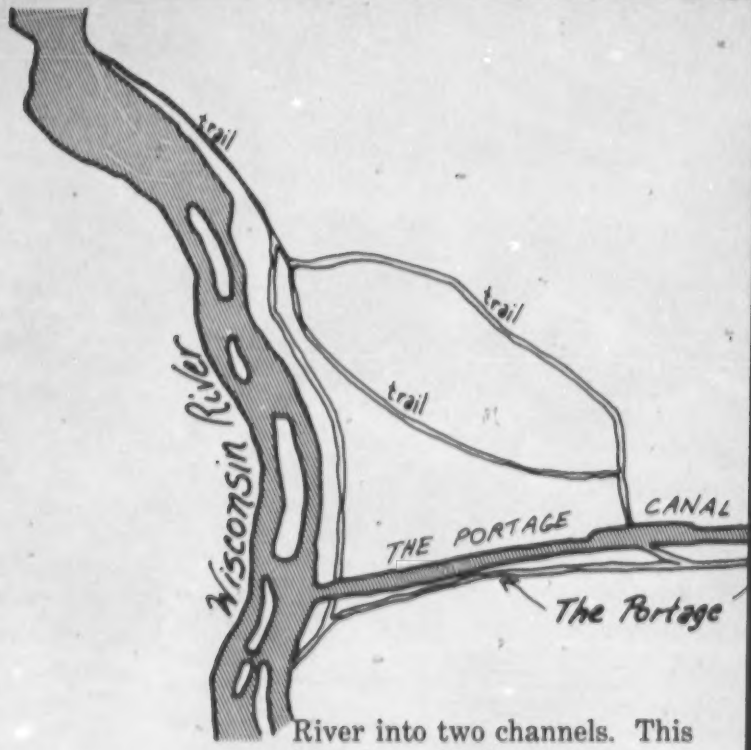
paddled down the Fox River and crossed to the Wisconsin River. Canoeists followed an almost unbroken water route from Green Bay to Prairie du Chien. At one place, the two rivers almost meet. Here travelers carried canoes and supplies from one river to the other. Such an area of land is called a portage. Portage is a French word meaning "carrying place." The city of Portage grew up at this carrying place between the Fox and Wisconsin Rivers.

Early mills were built on swift streams. At a gristmill, waterwheels turned the two millstones which ground grain into flour. Water also provided power for sawmills. Logs that had been floated downstream were sawed into planks and boards. The name of the village of Gays Mills tells us that mills were built here. It also tells us who built them. James and John McKee Gay settled along the Kickapoo River. James built a sawmill, John a gristmill.



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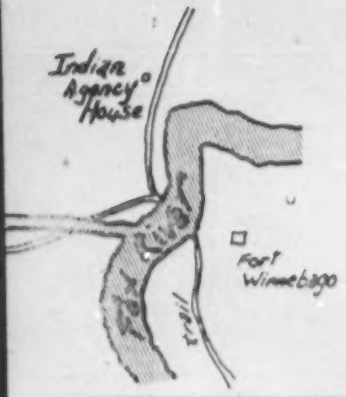
Some place-names honor a person. In addition, some, like Port Edwards and Port Wing, give clues about the landscape.

In about 1840 John Edwards, Sr. and Henry Clinton built a sawmill on the Wisconsin River. The settlement nearby was known as Frenchtown. A number of French people lived there.

There is a large island which divides the Wisconsin River into two channels. This island provided a port or a safe place for storing and sorting logs. Lumber rafts stopped here. Because the river was used as a port and John Edwards was an important settler, the village was called Port Edwards.

There is another port or harbor near the mouth of the Flag River which flows into Lake Superior. Lumber boats, passenger ships, and freighters all stopped here. Colonel Wing was a well-known and important man in the region. He was honored when the name Port Wing was chosen for this place.

Portage



These are a few of many colorful and interesting place-names in our state. Do you know what the name of your town, city or county means? If you would like to find out, here are some steps to follow:

1) Think about the place-name. What language is it? Does it describe a land feature? Is it a person's first or last name? 63

2) Read books about the history of the area. Old books can be especially helpful. They often contain stories from people who were alive when the place was named.

3) Look at old and new maps. Do you find any other names for your town?

4) Study the landscape. Look at old photographs and drawings for clues.

5) Talk to senior citizens living in the area. They often know how towns got their names.

6) Is the word "New" a part of your town's name? What clue does this word give about places like New Glarus, New Berlin, and New London?

7) What do these place-names tell us?

Two Rivers	Chippewa Falls	Highland
Watertown	Beaver Dam	Denmark
Rice Lake	Sauk City	South Milwaukee

What is a glacier? How is it like a bulldozer?

Name the five regions in Wisconsin. Describe the landscape in each.

How did the Driftless Area get its name? What does this area tell us about how glaciers change landscape?

The rivers that flow into Lake Michigan are short, but quite important. How are they used?

Explain how farmers raise crops in the sand region of the Central Plain. Is this different from the farming methods in your county? How?

64 Explain how caves can be formed by water.

Draw a mural showing how Indians smelted lead ore.

Write the history of place-names in your county.

Using What We've Learned